THE CHEMIST

AUGUST 1948 VOLUME XXV, No. 8

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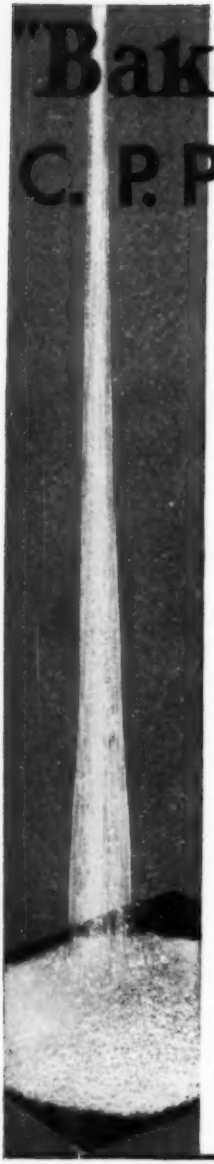

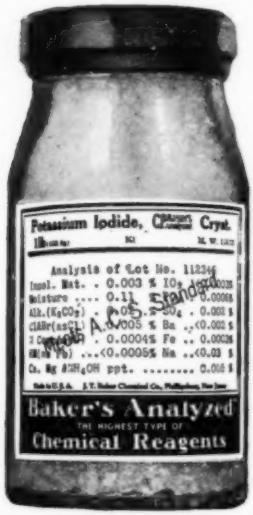

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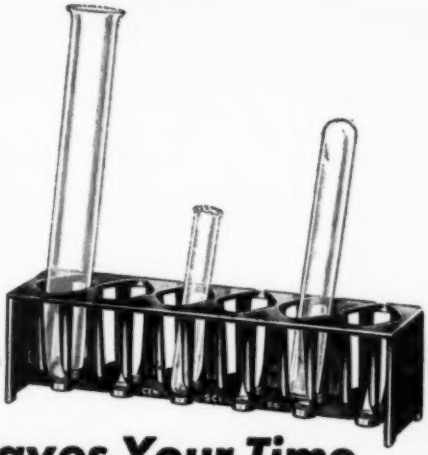

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The Chemist

Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.
60 East 42nd Street, New York 17, N. Y.

Volume XXV August, 1948 Number 8

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Entered as second class matter April 8, 1936, at the Post Office at New York, N. Y., under Act of August 24, 1912. Issued monthly at 60 East 42nd Street, New York 17, N. Y. Subscription price, $2.00 a year. Single copy, this issue $0.25.

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Cover Picture

Dr. Frederick A. Hessel, treasurer, A.I.C. since 1943, was born in Belgium in 1898. During World War I, he enlisted in the U. S. Army and served in France. He received the M.S. degree in chemistry from the Meurice Institute of Chemistry in 1922; was graduated from French Petroleum Institute in 1923, and received the D.Sc. degree from the University of Strasbourg in 1924. He was employed by the Vacuum Oil Company from 1925 to 1929. He engaged in investment banking from 1929 to 1939. Since then he has been connected with the Ellis-Foster Company, and president (since 1941) of Montclair Research Corporation, Montclair, N. J. He is the co-author of two books and a number of articles and patents.

Scheduled for Later Issues

Annual Reports of the Chapters
The Question—the Answers (Continued)
Has the Chemist's Professional Status Improved?
"The Influence of the Technical Man in Society," by Dr. Otto Eisenschiml, F.A.I.C.
"The Future Role of the Analytical Chemist," by Dr. Walter J. Murphy, F.A.I.C.
"Industry Goes to School," (An abstract). By J. Manczyc.
"Rewards From Creative Work," by Marvin J. Udy, F.A.I.C.
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Pectin, according to preliminary tests, may replace peanut oil as a carrier for penicillin..

Biochemistry in the Service of the Food Industry

Dr. Lloyd K. Riggs, F.A.I.C.

Director, Nutrition Research, Kraft Foods Company, New York, N. Y.

(Address given at a meeting of the New York Chapter, A.I.C.)

THIS subject, to be adequately treated, should enumerate the many outstanding contributions of biochemistry to at least several divisions of the food industry. Such a method of treatment does not fit well into present limitations. Permit me, therefore, to give a running story of some few contributions of one phase of biochemistry, the science of nutrition, to an important branch of the food industry—the cheese business.

It is also convenient to limit the word "service" to mean returns to business in the form of dollars or dividends. And, incidentally, when thinking of the cheese business, please keep in mind the following figures: America makes about one billion pounds of cheese each year. This requires some ten billion pounds of milk which at $4.00 per cwt. means a raw material cost of approximately $400,000,000. When processing, control, storage, transportation and distribution charges are added to the cost of raw material, the cheese business is seen to be an important industry even in this land of big business.

It has frequently been said that a chemist is a person who makes crude measurements on highly refined materials and that a physical chemist is one who makes fine determinations on crude materials. A biochemist is then said to be one who makes crude measurements on crude materials. The biochemist does, however, employ certain very highly refined substances and upon occasion does make use of some highly refined methods learned from the physical chemist.

It is true that the biochemist working in the field of nutrition frequently

substitutes white rats for test tubes. All of his work must be done with an eye to the twin sciences of anatomy and physiology. It generally requires special statistical methods to evaluate the results of animal experiments. But all in all, the nutritionist does draw conclusions which are both valid and consistant.

This story involves some of the early services of biochemistry to the cheese business and illustrates some of the ways in which a biochemist works and thinks.

It was about 1927 that I first met John H. Kraft who is now president of the Kraft Foods Company. I was then in charge of certain industrial fellowships at the Rutgers University College of Pharmacy, Newark, New Jersey. Mr. Kraft told me of his troubles with whey, the liquid which remains over from milk when cheese curd is made by precipitation or coagulation. It appeared that whey disposal was a problem. It contaminated streams and was a general nuisance. Mr. Kraft asked a simple question, "Does whey have any food value?" Of course, I didn't know. It was not in the books. I did, however tell Mr. Kraft that I thought that I could find the answer to his question. We talked over the question, and the Kraft Company set aside a sum of money for a fellowship to investigate the food value of whey.

Whey itself is a rather dilute product. It contains only about six pounds of solids in each 100 pounds of whey. The composition of these solids is approximately as follows:

Lactose (milk sugar)	70 to 74%
Protein	11 to 14%
Ash	8 to 9%

We knew, even in 1927, that the whey contained a considerable number of unidentified substances and we were especially struck with a yellowish-green fluorescent color which appeared to be characteristic of whey.

In order to help us to proceed with our studies, the Kraft Company dried some whey and sent it to the University in a bag plainly labeled, "Whey Powder." An express truck drove up to the College and tossed that first bag of dried whey out onto the cement sidewalk. It hit with a thud and broke the cement slab on which it landed. Somewhere that bag of whey powder had set itself into a new and very, very resistant form of concrete.

There was at that time in Newark a grinding company that advertised, "We grind anything." They took our bag of whey and then considered revising their advertising slogan to "We grind almost anything." It seemed for a while that we might have to pay for some high-priced grinding machinery but it was eventually possible to dissolve the whey out of the mill with water. By means of great strength and a sledge hammer, we finally arrived at the label declaration

on the shipping container, *viz.* some whey powder.

First Experiments

Our first experiments with whey powder were the simplest that could possibly be devised. Young white rats were put on an exclusive diet of whey powder. Our reasoning was as simple as our experiment. Here we had in whey powder a substance containing some 70 per cent carbohydrate for calories; 8 per cent of ash for mineral requirements, and 12 per cent of protein for growth and tissue repair, not an ideal diet by any means; but we thought that it should be good enough to maintain experimental animals and to permit some growth.

Our animals did not take very well to an exclusive diet of whey. Eventually they apparently decided by some process of rat psychology that even an exclusive diet of whey powder was better than starvation.

The results of this simple experiment were at best astonishing and at least disconcerting. The man who wrote the song, "Nobody Ever Died for Dear Old Rutgers" most certainly never saw those rats. We produced some of the most miserable creatures that ever survived or almost survived the bright ideas of a biochemist.

A report of these experiments was drawn up. It pointed out the following results:

1. The animals suffered from severe and persistant diarrhea.
2. They failed to grow as animals on a 12 per cent protein should grow.
3. They developed rough coats and an unkempt appearance.
4. They developed a peculiar and characteristic pot-bellied appearance.
5. The animals which did survive had a tendency to go blind from the development of corneal opacities or cataracts.

We again had recourse to the literature but did not find much to help us in explaining these results. The books stated that lactose was just another carbohydrate and relatively inert. We extracted some of the protein of whey and found that laboratory animals thrived on it. We ashed whey and fed the ash thus obtained with no unfavorable results. Could we be dealing with some unidentified, toxic whey constituent?

Then I remembered some experiments that I had previously carried out. I had wanted to prepare a nearly perfect vitamin A-free diet. A highly purified carbohydrate seemed to be required and because lactose is easily purified by recrystalization, lactose was decided upon for use in the vitamin A-free diet. This diet, high in lactose, produced symptoms like those observed in our rats fed on an exclusive diet of whey powder. Apparently, lactose was involved or incriminated. Could it be that mother nature or the process of evolution had

made a mistake in making lactose a constituent of the basic food for all young mammals—milk?

Facing the several dilemmas posed by our first experiments, I decided to take a trip through the cheese-making country of the Middle West. It occurred to me that cheese makers and farmers might know something about whey that the men who wrote the books had overlooked. From farmers I learned two things: 1. That a little whey is a good feed for pigs—a conditioner, the farmers called it. 2. That large amounts of whey are very laxative for pigs and that whey helps in expelling intestinal parasites.

From the cheese makers I learned that copious draughts of liquid whey was highly regarded as a remedy or cure for a clinical condition known to occur occasionally in the Middle West and commonly known as the "hang-over."

I talked with enough farmers and saw enough farmers' pigs to be convinced that there was a substantial background of factual material to support the opinions of farmers with regard to the value of whey for pigs.

Now there is practically no limit to what a biochemist will do in the interests of scientific investigation. I, and some fellow scientists, purely in the interest of science, induced in ourselves the clinical condition previously mentioned and took the whey treatment. It worked wonders, and for a time I did a considerable business among some of my friends who suffered occasional occurances of the clinical condition in question, acquired, however, quite outside the realm of scientific investigation. Then, one day, I discovered not in the textbooks, but in the dairy of the great Samuel Pepys, that the whey treatment for hang-over was well and favorably known many, many years ago.

Further Experiments

After this trip through the Middle West I came back to my laboratory and started a new series of experiments. I prepared an "artificial" whey powder made up of purified lactose 78 parts; lactoalbumin and casein mixture, 13 parts, Osborne & Mendel salt mixture, 9 parts. We knew that whey powder was practically devoid of vitamins A and B. That was about all that we then knew about vitamins. So we added minimum amounts of cod liver oil and tiki tiki to our artificial whey powder and gave it to some rats as an exclusive diet. These rats did promptly die for Dear Old Rutgers. But we found out something, vis. that the artificial whey powder was a worse exclusive food for rats than was natural whey powder.

By this time, we had given up the idea that whey powder by itself might be a good food. But these experiments with artificial whey powder led us to think that natural whey powder

might have some unique properties or virtues.

Our next step was to devise a distinctly sub-optimal diet for rats. It was made up of starch with cod liver oil and tiki tiki in minimum amounts to permit growth. For certain groups of rats we added 6 per cent and 12 per cent of whey powder to this basic deficient ration and made the protein content up to 12 per cent with purified casein. For other groups of rats, we prepared similar diets except that we used artificial or synthetic whey powder.

The animals on the sub-optimal diet plus whey powder grew and flourished. The animals on the same basal ration plus artificial whey powder languished and eventually died.

From these experiments we concluded that whey powder (except for vitamins A and B) in amounts of 6 per cent to 12 per cent of the diet supplied about everything that animals needed to grow well within the limits of our sub-optimal diet, when the rations were made up to a minimum protein content with casein. Evidently, there was something unknown and valuable in whey powder.

In the meantime, the scientific literature was beginning to call attention to a new vitamin, variously called vitamin B^2 or vitamin G. This was later identified with lactoflavin and it is now called riboflavin. This is the greenish-yellow fluorescent pigment characteristic of whey.

Then we read that Dr. H. C. Sherman's laboratory had succeeded in extracting water soluble vitamins from whole wheat with dilute alcohol. So we tried the extraction of whey powder with everything we could think of, including alcohol and glacial acetic acid. We found that when we added an alcohol extract of whey powder to our artificial or synthetic whey powder that it was improved to such an extent as to be almost as good as whey powder itself.

Riboflavin Content of Whey

We never did find out what all we extracted from whey powder with alcohol, but we did find vitamin B^2 or vitamin G or Lactoflavin or Riboflavin. Riboflavin was found in the meantime to be important in poultry rations. Here was a special value in whey powder.

The Kraft people were very much interested in these findings. Whey powder now had a place in animal and poultry feeds. Some 6 per cent to 10 per cent of whey powder provided accessory dietary factors in feeds. It also provided high quality proteins. Whey powder also found use in a so-called flushing mash, due to the laxitive action of lactose and thus became a standard product used for the control of an all too common poultry disease, coccidiosis.

Kraft built plants to produce powdered cheese whey, now dignified under a trade name "Kraco." Incidentally, they learned how to make

it in the form of a powder and not in the form of concrete. The advertising men were called in and were impressed with the fact that whey powder or Kraco contained the then new vitamin B^2, G, or riboflavin. So what was advertised and sold was riboflavin and we all practically forgot about whey. Of course, I was a party to placing emphasis on riboflavin but I did have many misgivings. But who is a mere biochemist to talk an advertising man out of a good story?

We continued to sell riboflavin and this was a big factor in starting a search for other sources of this important vitamin. It was found in distillers products, fermentation liquors, and in a host of other places. Then the buyers began to tell us, "We can get riboflavin cheaper in some form other than whey." We said, "Yes, but we have whey." Then the boys with the sharp pencils turned to our advertising literature and said, "You have got riboflavin—period."

We had as a matter of fact sold whey powder short by our emphasing only one of its nutritional virtues. Of course, we now know that whey is short on some milk constituents like protein, and rather long on lactose, but when used along with other by-products of the dairy industry, cheese solids from rinds and trimmings, and skim milk or butter milk, it comes mighty near fulfilling the old dictum that "milk is nature's most nearly perfect food."

A Recent Product

One of the more recent developments to come from the Kraft laboratories is known as Kraylets, a dry grandular product containing 80 per cent milk solids—dried whey, cheese solids, and either skim milk or buttermilk solids. This product is by all odds the best supplemental feed for poultry and domestic livestock that has ever been tested in our laboratory or which we have encountered under field conditions. This product contains enough lactose but not too much. It contains proteins of the highest biological value that are available for animal feeding. It contains the natural accessory dietary factors present in milk. It contains riboflavin, too, but over my dead body are the advertising boys ever going to mention it.

Lactose

Before leaving the subject of whey, I would like to mention the fact that our laboratory has never lost interest in the lactose problem as such. In the December 1947 issue of the *Journal of Dairy Science* we published an article on "Some Unique Properties of Lactose as a Dietary Carbohydrate." This paper together with a report by my associate, Miss Beaty, before the mid-winter meeting of the American Association for the Advancement of Science, both confirms and extends our observations on lactose. These observations can be briefly summarized as follows:

1. Lactose in large amounts (50% or more of the diet) produces severe and persistant symptoms, such as diarrhea, rough coats, or pot bellies in white rats.
2. In lesser amounts (25 to 30% of the diet) lactose produces only slight and transitory symptoms.
3. Still lesser amounts (up to 15%) produce no symptoms at all.
4. The unique behavior of lactose (symptoms produced as noted above) is due to the way in which the constituent sugars are linked together.
5. Animals are able to adapt themselves to a diet high in lactose, when fed for considerable periods of time diets which contain lactose.
6. The pot bellies noted in rats on high lactose diets are due to intestinal fill, i.e. to large amounts of liquid in the intestinal tract.
7. Moderately high levels of lactose feeding tend to increase the water and ash content of dressed animal carcasses.
8. Animals live for relatively long periods of time without any riboflavin in the diet, provided that the diet contains a moderately high (30%) percentage of lactose.

It is work like this on the fundamental aspects of lactose feeding that makes the work of the biochemist in the food industry a lot of fun as well as a job.

Product Research

Now I would like to go once more back into history to illustrate a service of biochemistry of nutrition to the food industry.

When I was at Rutgers, the Kraft Company was interested in a new product which they now call Velveeta —a cheese food. It contained not only cheddar cheese but also whey solids and the non-fat solids of milk. This product, Velveeta, was submitted to me with the simple question, "Is it a good food?"

Now, I knew a lot about the nutritional advantages of whey solids and of non-fat milk solids by the time that Velveeta came along. I, therefore, ventured a prediction that Velveeta would be found to be a better balanced food than cheese, that it would in fact be found to be a better food.

In order to submit this new product Velveeta to the severest possible test, I decided to feed it along with nothing but corn starch. Corn starch supplies calories but a good pure starch supplies nothing else.

I had been experimenting with this nothing—but—calory (starch)—diet and finding out how long it took animals to starve to death on it. Then this nothing-but-calory diet was supplemented in one case with the solids of fresh sweet milk. In a second case, with the solids of Velveeta, and in a

third case, with the solids of cheddar or American cheese.

The animals on the diet of starch and cheese failed to grow after about the first two weeks on test. The animals on a diet of starch plus milk throve and grew, as did also the animals fed on starch and Velveeta.

We were not, incidentally, troubled about deficiencies of copper and iron. There must have been plenty of copper and iron in the market milk of that time.

Not only did our animals thrive on the nothing-but-calories-plus-Velveeta diet, they did better than animals on the starch diet plus an equal weight of the solids of fresh whole milk.

These results do not of course mean that cheese is not a good food. It only means that Velveeta and fresh milk contain a lot of nutritionally important substances not found in cheese, some that are drained off in cheese whey.

Our data was accepted by the American Medical Association and by nutritionists generally. When the advertising boys got through with the data of these experiments, they took the form of the statement that Velveeta is "Digestible As Milk Itself."

I often wonder how much these nutrition studies have had to do with the sales of Velveeta. Certain it is that many home economists were interested and perhaps some housekeepers and mothers were impressed. Quite certainly the Kraft Company showed its confidence in biochemistry and the science of nutrition by investing good American dollars in the manufacture and advertising of Velveeta—advertising largely based upon these studies made in the nutrition laboratory. Velveeta is not only a good food, it is good to eat, and that is in all probability why it is the largest selling product of its kind.

This, then, is one of the ways in which biochemistry, and more specifically the science of nutrition, can be of benefit to the food industry.

Staff Appointments at Standard Brands

Standard Brands, Inc., announces that Dr. William R. Johnston has been appointed director of research, in charge of scientific research activities with headquarters at The Fleischmann Laboratories. Dr. Charles N. Frey, F.A.I.C., director of scientific relations, will have his headquarters at 595 Madison Avenue, New York, N. Y., where he will be available on consulting basis to the home office executives and to Dr. Johnston. Robert F. Light, F. A.I. C., will continue as manager of The Fleischmann Laboratories. Mr. George W. Kirby, F.A.I.C., formerly technical director of the Fleischmann Laboratories has been appointed technical director of the Fleischmann Manufacturing Division with headquarters at 595 Madison Avenue, New York.

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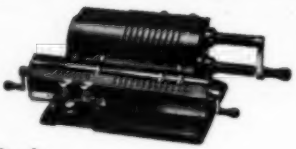

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Annual Reports

(Presented at the A.I.C. Annual Meeting)

Preliminary Report
Committee on The Chemist In Public Health

INTEREST of the chemist in matters affecting public health goes back to the dawn of the history of science. With the increasing complexity of urban and civilized life, the need for scientific control of matters affecting health has broadened. Modern health departments have control of milk laboratories, water laboratories, bacteriological laboratories, serological laboratories, water and sewage laboratories, and various special laboratories. In all of these the chemist has a direct or indirect interest.

As a professional organization THE AMERICAN INSTITUTE OF CHEMISTS became interested in the professional status of the chemist in laboratories concerned with the public health. There were reports that the caliber of some of the scientific work done in the public health field was not up to that commonly accepted in the industrial world. Such a situation, it seemed to appear, was not accidental but was perhaps influenced by well-meaning but ill-conceived regulations.

To obtain facts on the actual situation as to the extent and character of regulation of laboratories in the public health field, the Committee of THE AMERICAN INSTITUTE OF CHEMISTS sent a letter of inquiry to the Secretaries of State of the various states in the United States. Thirty-seven replies were received. It became obvious on examining these replies that very few of the states have made regulations to date in any field except those affecting serologic blood tests for pre-marital and pre-natal control. This preliminary report is, therefore, concerned with the analysis of the laws and regulations in regard to laboratories performing such blood tests.

Such analysis indicates that the laws of at least thirty-one states require a pre-marital serologic blood test; and that the laws of at least twenty-three states require a pre-natal serologic blood test. A set-up of approved laboratories under the State Department of Health exists in some fifteen states. The regulations for the qualifications of the director and personnel of these approved laboratories is a matter in which the INSTITUTE has greatest interest.

Of the states which have regula-

tions, the vast majority simply specify that the director shall have scientific competence in the field and that the personnel shall be satisfactory to the State Departments of Health. The following states have sent in detailed regulations which indicate a more specific regulation of qualifications for directorship: California, Florida, Illinois, Indiana, Iowa, Maryland, New York State, New York City (in the State of New York , New York City has regulations which are different from the state at large), Ohio, Pennsylvania, Wisconsin.

In the following states, regulations forbid a chemist from being a director of an approved laboratory: Indiana, Iowa, New York State, New York City, Ohio, Wisconsin. The regulations in these states require that the director shall be an M. D., and in most cases the requirement goes further to say that he shall be a member of the American Medical Association.

In certain other states, particularly Illinois and Maryland, the replies received by the committee indicate an awareness on the part of the authorities in those states of the existence of a drive to prevent a chemist from functioning as a director of an approved laboratory and a denial of the validity of such a position.

A letter from an authority in one of these states states: "These regulalations are based on the premise that laboratory work is not a practice of medicine." It is evident from the disparity of the regulations of various states that a fundamental difference exists in the attitudes of various state authorities toward the position of laboratory work. Those states which have adopted restrictive regulations requiring an M. D. have accepted the tenets of the American Society of Clinical Pathologists that the performance of laboratory work constitutes, in itself, the practice of medicine.

It is not the purpose of this report to argue the question of whether or not the American Society of Clinical Pathologists is correct in its viewpoint. Such discussion is proper in the hands of the general body of scientists who perform and direct laboratory work in these laboratories.

This matter concerning the professional status of chemists and their fellow scientists merits continued study of the laws and regulations governing the operations of laboratories engaged in serving the public in the public health field.

—A. J. Nydick,
Chairman

A.I.C. Amendments Ratified

The amendments to the constitution of THE AMERICAN INSTITUTE OF CHEMISTS, which were adopted at the Annual Meeting held on May 7th, have been ratified by mail ballot of the Fellows of the INSTITUTE.

These amendments appear on pages 280-282 of the June issue of THE CHEMIST.

Committee on Licensure

1947-1948

THE subject of licensing of chemists was highlighted during the past year by the results of the A.C.S. licensing poll. An extended questionnaire was circulated to 49,827 members and 21,937, or about 43 per cent, were returned. The questionnaire was divided into thirty-three sections and covered practically all phases of licensing, registration, and national certification. Before it was circulated, your committee chairman, along with some twenty-five other individuals, was asked for criticisms of the form of the questionnaire and several changes were recommended in the interest of avoiding bias.

In general, the results of the poll showed that a majority did not favor legal registration, although on the question of whether any form of regulation should be established, 46 per cent said "yes", 46 per cent said "no", and 8 per cent were undecided. On specific points, 54 per cent were against permissive licensing; 79 per cent were against state licensure, and 86 per cent did not favor compulsory licensing. On the question of compulsory licensing of chemists directly concerned with life, health, and property, less than half voted for compulsory licensing, although they were equally divided on state registration of such chemists. 66 per cent were opposed to compulsory licensing of chemists in public health work. In states where there have been definite licensing movements such as New York, Ohio, Illinois, and California, the votes generally reflected those of the nation.

On the question of national certification of chemists, there was about an equal division of opinion. A majority favored national certification precedent to state regulation.

The Canadian Institute of Chemists sent out 2,000 questionnaires in 1947 on the question of provincial licensing of chemists. 608 questionnaires were returned; of these 327 were opposed in principle, 230 favored licensing, and 63 had no opinion. The Committee conducting the poll recommended getting a more complete picture.

The California Engineering Registration Law signed by Governor Warren in July, 1947, includes chemical engineers but specifically excludes chemists, physicists, geologists, and other industrial scientists. Similarly, chemical engineers, but not chemists, are included in the Professional Engineers' Act of the Province of Ontario, Canada.

In Ohio, medical men are en-

deavoring to make it compulsory to have an M.D. in charge of clinical laboratories. This movement to put chemists under the direction of physicists is being vigorously opposed by the Ohio Chemists' Council.

—Dr. Gustav Egloff,
Chairman

Committee on Patents 1947-1948

THE report for the Patent Committee regarding legislation proposed by Congress is as follows:

National Science Foundation Bills

Many bills have been introduced for the establishment of various national science foundations. Most of them are very complicated, and resemble WPA or Relief bills. The purpose alleged in the bills is to encourage science, but from all the indications the proposals would have just the opposite effect. In practically all the bills, a large bureaucratic organization is contemplated, which resembles other departments of the Government which are built up for political purposes. The politician's idea seems to be to have a Foundation which is dominated by a politically appointed administrator who would have broad powers, almost dictatorial in character, to carry out the very broad objectives by executive order. Where boards of scientists are proposed, such boards only have advisory powers without any authority to control the foundation or the activities thereof. The formula for the distribution of research funds is unduly restrictive and appears to be along political lines rather than scientific ones. The most deadly and dangerous sections of the bill are those relating to patents which, due to their very nature, might confiscate a form of private property and, due to their tenor, might tend to discourage rather than encourage private initiative in research whether in individual research laboratories, engineering laboratories, university laboratories, or industrial laboratories. *It is believed that all of these bills should be opposed* as being unsound in nature and as being destructive or detrimental to or destructive of the American system of free enterprise of free men. All the research which must be done by Governmental agencies for Governmental purposes, including defense, can be done with our present system and, in fact, is being done by our present system. It is not necessary to create and develop new Frankenstein Monsters in Washington to discourage research by individuals, whether located in their own individual laboratories or in engineering or university laboratories or in industrial laboratories.

Technological and Scientific Information

During the war, the Office of Technical and Scientific Information

was used to distribute information from various sources. It is the intention of the bills to attempt to make this organization permanent and to provide for Government financing of industrial research, for undertaking the evaluation of inventions to determine whether they were "promising," and if so, providing Government funds for development of these inventions. In addition, the bureau would disseminate technical information and record inventions. It is felt that the bills involve an onwarrented invasion of the American system of free enterprise of free men by bureaucrats and to incur large expenses which would be uneconomical and which may even involve waste. The bills, if enacted into law, would impair rather than stimulate the effectiveness of the American system of free enterprise for free men. Furthermore, if this bureau were once established, it would expand and grow larger and larger and ultimately would become another Frankenstein Monster in Washington and perhaps all over the country. Accordingly, *it is believed that these bills should be opposed,* and it is believed that the functions of the Office of Technical and Scientific Information should be transferred to the Patent Office and ultimately liquidated when the task is completed.

Extension of Terms of Patents

Numerous bills have been proposed for the extension of the terms of patents, particularly if the inventor or patent owner was a veteran. It is believed that bills for extension of the terms of patents which could not be exploited during the war period are unsound and may do a great deal of harm. It is felt that it is unnecessary to differentiate between patents as property and other kinds of property which could not be exploited during the war and that patents should not be singled out and granted privileges which are not accorded to other forms of property.

Anti-Monopoly

Although we are not concerned ordinarily with bills relating to anti-monopoly, nevertheless, certain bills have been introduced which have provisions relating to patents. Thus, the Morse Senate Bill S.72 makes provision for "preventing or eliminating monopolistic practices with respect to patents" which could provide for the compulsory licensing of patents, the outlawing of limited licenses, and the cancelling of patents under certain conditions. It is firmly believed that the system of compulsory licenses followed so generally in Europe is absolutely unsound and should not be followed in America. Furthermore, the imposition of limitations on the kinds of licenses which may be granted is a discrimination against patents. Disadvantageous features of this sort might discourage research and invention, might discourage the acquisition of patents,

and might discourage the licensing of patents, all of which have heretofore been beneficial to the country. In fact, if these unsound provisions from European countries are introduced into America, it might mean the abandonment of the fundamental principles of the American Patent System. *It is felt that strenuous opposition must be registered* against the Morse and similar bills to prevent their passage or the passage of a similar bill at sometime in the future.

Patent Office Fees

Various bills have been proposed to increase Patent Office fees and to provide additional income for the Patent Office, particularly to compensate for the increase in expenses. It is believed that those bills which merely endeavor to make moderate increases in the present fees are satisfactory in principle, but they should not be raised too high, otherwise they may be excessive to the point of discouraging the individual inventor and the small company. Furthermore, all bills, which are intended to apply a system of maintenance fees in the same way as European countries apply annual taxes to their patents, should be vigorously opposed as being unsound in principle and as being against the historic American system.

Amending Patent Statutes

A number of bills have been introduced to amend various sections of the Statutes for various purposes. Thus, the Brophy Bill (HR 3366) is intended to permit libraries of the United States to acquire back copies of U.S. Letters Patent. *Such a bill appears to be satisfactory and should be approved,* as it is believed to be essential to have a wide distribution of sets of U. S. Letters Patent throughout the United States where they will be available to individual researchers and investigators.

The Wadsworth Bill (HR 680) provides for the transfer of papers in a suit to obtain a patent under Section 4915 to the correct court when it is found that it should have been brought in the court of another district. It is believed that the provisions of this bill are desirable to correct inequities and to speed litigation. *Accordingly, it is felt that this bill should be approved.*

The Heffernan Bill (HR 2660) amends the statutes to provide that a patent shall be granted only if there is no opposition during a period of twelve weeks when an abstract of the application is published in the Official Gazette of the U.S. Patent Office. This bill is similar to the European system of oppositions which are notoriously bad. *It is therefore felt that the bill should be vigorously opposed.*

Certain bills have been introduced for the purpose of including a test to determine the presence or absence of invention in a patent. Thus, the Gamble Bill (HR 4061) provides for

the establishment of a criterion of invention by providing that the "predominating weight of evidence shows that the subject matter of the claim . . . fills a long-felt want . . .". Similarly, the Hartley Bill (HR 5248) provides that patentability is to be "determined objectively by the nature of the contribution to the advancement of the art, and not subjectively by the nature of the mental process by which the invention or discovery or improvement thereof may have been accomplished." It is firmly believed that all of these bills that attempt to set up a criterion of invention are unsound and are likely to cause confusion rather than clarification. In view of the fact that these bills are likely to introduce provisions which would make it more difficult and confusing for a court when handling a patent case, it is believed that they should be opposed.

In the event that you have any question or desire any further information, do not hesitate to call upon me as I shall be glad to cooperate.

—A. W. Deller
Chairman.

Committee on National Legislation Affecting Chemists 1947-1948

THE bill proposing the establishment of a National Science Foundation, which was passed overwhelmingly by both houses of Congress in 1947, met an unexpected fate when President Truman vetoed it. The public reaction to the veto was one of amazement, as the bill had the support of both parties and its objectives had been generally approved by most affected interests.

The President gave as his reasons for vetoing the bill that (1) it vested the "determination of vital national policies, the expenditure of large public funds, and the administration of important governmental functions in a group of individuals who would be essentially private citizens;" (2) the Executive Branch could not hold a civilian part-time group responsible for the Foundation's administration; and (3) the director, as an appointee of the foundation, could not be held responsible by the President. In short, the President felt that, desirable though the aims might be, there were administrative weaknesses which could not be accepted.

This situation prompted its own correction. Senator Smith, who sponsored the unlucky bill of last year, and other Congressmen have since devoted much time in committee sessions and with administration officials toward developing legislation designed to overcome objectionable features of the vetoed bill. The result is S.2385, introduced in the Senate by Senator Smith on March 25, 1948, and H. R.

6007, a similar bill presented in the House by Congressman Wolverton on the same day. These bills at the present writing (April 6, 1948) await consideration within referral committees and will eventually come up for action of the respective branches of Congress. Inasmuch as the proposed legislation has favorable prospects we present a brief analysis herewith.

"To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes" is the stated object of the new bills. They do not specifically aim "to investigate the causes for wars, to develop means for their prevention, to secure the nation and mankind against war . . ." as was suggested by a member of your committee (Dr. Eduard Farber, in *Chemical and Engineering News,* March 17, 1947, p. 774), and so disappoint those who hoped for inclusion of sociological and humanitarian aspects.

The Foundation is to consist of twenty-four members appointed to 6-year terms by the President. These persons shall be eminent in fields of science, engineering, education, etc., selected on the basis of record and representative of all areas of the nation. The President is requested to consider recommendations advanced by organizations such as the National Academy of Sciences, Association of Land Grant Colleges and Universities, and others.

The Director of the Foundation is to be appointed by the President on recommendation of the Foundation. The Director heads an Executive Committee of ten members. His term runs for six years, at an annual compensation of $15,000.

The Foundation is authorized:
(1) to develop and encourage the pursuit of a national policy for the promotion of basic research and education in the sciences;
(2) to initiate and support basic scientific research in the mathematical, physical, medical, biological, engineering, and other sciences;
(3) to initiate and support research relating to the National defense, after consultation with the Secretary of Defense;
(4) to grant scholarships and fellowships;
(5) to foster interchange of scientific information with other countries;
(6) to correlate the Foundation's research programs with those of other groups, public and private;
(7) to establish, as necessary, special commissions dealing with cancer, heart and other diseases, and other problems.

Four Divisions are created within the Foundation: (1) Medical, (2)

Mathematical, Physical, and Engineering, (3) Biological, (4) Scientific Personnel and Education. Other divisions may be set up as necessary. The Foundation is directed to maintain a register of scientific and technical personnel, starting with transfer of the Labor Department's National Roster of Scientific and Specialized Personnel.

The Foundation is empowered to make the necessary expenditures for conducting its operations and to enter into contracts both in the United States and abroad for effecting its research activities. The Foundation is not itself to operate any laboratories or plants. It is authorized to publish scientific and technical information consistent with the national interest. On patents, the bill stipulates that each contract shall contain provisions for disposition of inventions, but nothing in the Act authorizes changes in existing patent laws.

Important to existing federal agencies is the requirement that the Foundation's activities shall not interfere with functions or activities of other Government research agencies but shall be construed as supplementary thereto. However, funds may be transferred from a Government agency to the Foundation on approval of said agency, to conduct research for which the funds were appropriated. Programs in the field of atomic energy must first have concurrence of the Atomic Energy Commission.

It seems clear that the terms of the Smith-Wolverton bills give the President the control and responsibility he desires, which were found wanting in last year's bill. Upon passage by Congress, the National Science Foundation Act may be expected to receive the President's signature. How soon Congress will reach the bill cannot be determined but committee action will likely proceed rapidly and without hearings in view of past testimony. Again we say as last year, the prospect for creation of a National Science Foundation is good, and in the near future.

To complete the record on this type of legislation, two other bills were presented earlier in the House of Representatives—one by Congressman Priest, whose bill is similar to the one he introduced last year, and the other by Congressman Heselton. The latter bill is the same one that President Truman vetoed. Neither is likely to receive much consideration now that the new legislation is pending.

The creation of a National Science Foundation may be expected to exert a favorable influence for the services of chemists. Chemistry is basic to most scientific research investigations and this will be particularly so regarding the projects visualized under the National Science Foundation. The chemical profession should therefore follow closely upon the various programs to be sponsored by the

Foundation. A new responsibility falls upon the profession, with the extra research load to be carried; that is, the training of adequate numbers of chemists to meet the need. Educational institutions share this responsibility, and how it will be met will have a profound influence on the Nation's scientific progress.

In addition to the foregoing, the Government's synthetic fuels program has an important bearing on the chemists' outlook. No one can forsee at present how large the synthetic fuels industry will become but the potentialities are tremendous. Industry is proceeding cautiously and the Government is going along with some research already authorized and other activities pending. The Case bill, signed into law on March 15, 1948, adds to the Bureau of Mines' pilot plant investigations, while legislation proposed in the House would authorize a 400-million dollar appropriation for construction of three synthetic fuel plants.

—L. N. Markwood, Chairman
Dr. Gustav Egloff
Dr. Eduard Farber

Committee on Employment
1947-1948

IN view of the very satisfactory state of supply and demand for chemists and chemical engineers, your chairman has not thought it either helpful or desirable to call a meeting of the Employment Committee.

Other groups in a better position to initiate and carry out plans for an increase in the supply of chemists and chemical engineers are quite active and apparently in no need of help at this time from our Institute. There is, accordingly, nothing to report at this time other than satisfaction at the completeness with which the profession is employed.

It should be recorded, however, that chemists and chemical engineers, like most other white collar workers, have not had salary adjustments, except perhaps in some of the very low brackets, compensatory for the depreciated value of the dollar with which they are paid. It is obvious that supply and demand will sooner or later bring about this adjustment, but within the last year our group has been at some disadvantage with respect to others.

Contrary to the fact that chemists and chemical engineers have still not had their salaries adjusted in proportion to the depreciated purchasing power of the dollar with which they are paid, the supply of chemists has built up, and I consider that we should perhaps think a bit about either diminishing the supply somewhat or else finding a broader outlet.

If the Marshall Plan goes through

—as now seems most likely—there should be a considerable demand for chemists for export. It is my opinion that this would take care of any surplus produced in this country over the next couple of years. Training chemists for work in foreign countries should be emphasized in the college curricula. Requirements for foreign service differ materially from domestic service, and our educational institutions would do well to take this into consideration.

Based on my own experience and that of my associates, I would say that an increasing percentage of American chemists in foreign service is a healthy prospect, not only for the individual and the profession, but for the national good as well.

—Frank G. Breyer
Chairman..

Report of The Editor 1947-1948

THE CHEMIST, in recognition of the Twenty-fifth Anniversary of THE AMERICAN INSTITUTE OF CHEMISTS, asked our members, who joined in 1923, certain questions, the answers to which would survey professional advancements; bring out some of the activities of the AIC during the years, and help younger chemists. The suggestions to young chemists were published serially beginning with the January issue, and are still continuing. A summary will be prepared at the close of the series.

Some of the replies to the survey were published in the May CHEMIST, "Silver Anniversary Issue," with specially designed cover, in commemoration of our Twenty-fifth Annual Meeting. This issue also contained a number of summaries of what chemists have contributed to various fields during the last quarter of a century. Other articles of this nature will appear in later issues during 1948, under the individual heading of "A Silver Anniversary Article." We are deeply grateful to the Founder Members and to the experts in the various fields who took the time and trouble to prepare this material for readers of THE CHEMIST.

The editorial policy, consistent with that of a professional organization of chemists, is to publish professional, not technical articles. This policy is unique among publications in the science field, and it fills a real need in the professional development of the chemist. This was happily recognized by *The Laboratory* this year, when it selected THE CHEMIST as one of the publications to appear in a brief list of "Valuable Journals on Science and Technology," which had been chosen from among several thousand titles. In describing THE CHEMIST, its editorial policy was neatly summarized as, "It is less concerned with the mundane problems of industry and the laboratory than with the more intangible matters of policy,

ethics, and matters of research and education. In these fields it contributes wise counsel and informed opinion from many eminent leaders in the profession. Besides discussing the affairs of the INSTITUTE, some of the authors are quite articulate regarding the status of the chemical profession. . ."

How well THE CHEMIST meets the challenge of this opportunity to be an important and constructive influence in the development of the professional life of the chemist depends upon the cooperation of every member of THE AMERICAN INSTITUTE OF CHEMISTS. Suggestions, ideas, news items, articles, are always welcome.

May we express our deep appreciation to all who contribute to THE CHEMIST; to the officers and councilors of the INSTITUTE; to the Chapters, to the contributing editors, to the editorial advisory board, and to the advertisers, all of whom, in cooperation, make the publication of THE CHEMIST possible.

—V. F. Kimball,
Editor.

Committee on Qualifications

THE Committee met ten times during the year, a few days before each Council meeting, to review the qualifications of the applicants for membership. Each committee member and each councilor was supplied with a list of applicants and their qualifications, a few days before the meeting, so that they could evaluate the applications and be prepared to submit their recommendations at the meeting.

The Committee was impressed with the high quality of the applications received during the year, and the AIC membership is to be commended for bringing the organization to the attention of such well-qualified, established chemists and such promising younger chemists.

Dr. Donald Price
Chairman.

Ott Visits Europe

Dr. Emil Ott, F.A.I.C., director of research, Hercules Powder Company, is spending three months in Europe. He addressed the Swiss Institute of Technology, Zurich, Switzerland, June 19th, on cellulose and rosin chemistry. On July 6th, he spoke before the Plastics Group of the Society of Chemical Industry, London, England, on the characteristics of cellulose derivatives. After visiting in Zurich, Germany and Holland, Dr. Ott expects to return on September second.

Calco Plant Tour

The New Jersey Chapter of the American Institute of Chemists toured the Calco Division of the American Cyanamid Company, Bound Brook, New Jersey, on June 4, 1948.

Communications

Writers Please Note

To the Editor:

In a great many cases where trademarks are used in scientific and other literature, the trademarks are not capitalized or set in quotation marks . . . One unaware of the facts might readily conceive the trademark to be merely a descriptive term . . .The trademark is a valuable property right of the manufacturer and once adopted, its value depends upon keeping it in use as a trademark. We are all aware that the trademarks "Aspirin" and "Cellophane" were lost through appropriation of these marks by the public. They became a part of the common language. This could have been prevented, in part at least, if in use these two terms had always been clearly indentified as trademarks. . .

A trademark is properly identified as such if it begins with a capital letter, or if the word is placed in quotation marks. It is usually possible to recognize a trademark if one remembers that most coined terms applied to brands of drugs or to newly developed chemicals have trademark characteristics. For the purpose of protecting property rights, it is always better to be on the safe side by regarding a coined word as a trademark rather than as a term in the public domain. . . .

To those writers and editors who have kept the proper delineation of trademarks in mind, we wish to extend our sincere thanks. The members of our Association spend millions of dollars annually to sponsor various research projects. The scientific knowledge resulting from this work is of real value. We feel that readers of the literature should be informed that certain words are in fact trademarks which identify the source of genuine material.

—Carson P. Frailey
Executive Vice President
American Drug Manufacturers Association

In Defense of Aristotelian Logic

To the Editor:

The May issue of THE CHEMIST contained an article by Dr. Hilton Ira Jones entitled "Some Problems of the Professional." The latter part of the article (pp. 201-203), which considers "The scientific method" as a "method of arriving at the truth," advances the thesis that induction is the only valid method of reasoning.

A major part of the arguments which Dr. Jones employs consists of unsupported criticism of deductive reasoning. Not only does he adduce no evidence for these inaccurate general statements, but he has unfortunately included several untruths in his contrasting sketch of Galileo and the "new method."

Dr. Jones states (p. 203): "—the first question in a scientific discussion always is 'Just what now are the facts?'" I should like to give a few of the facts, readily found in the 1947 edition of the *Encyclopedia Britannica,* for comparison with several of Dr. Jones' assertions.

A. Dr. Jones says "Aristotle—gave us a method—. Men followed it and gave the world the Dark Ages." (p. 201)

The *Encyclopedia Britannica states*:

(1) "With the progress of mediaeval studies in the 19th century it becomes impossible for historians to dismiss one of the great constructive periods in human activity with an epithet implying contempt for its achievements, and the phrase (Dark Ages) has now become obsolete." (Vol. VII p. 60)

(2) The writings of Aristotle were, with the exception of the earlier and more elementary parts of his logic, unknown to Western Europe until the beginning of the 13th century. (Vol. II p. 354) (How then could the Aristotelian method have had any effect upon the period between the 5th and 12th centuries?)

(3) "It is one of the greatest services of Aristotle to knowledge that he laid down, and was the first to lay down, these methods, and that he invented the science of logic." "—and the inventor of the syllogism, as he may justly be called, deserves to be celebrated in the annals of human thought." (Vol. II p. 353).

(4) "If the essence of his method and teaching had been followed, the fruit would have been a great period of scientific investigation and discovery." (Vol. II p. 353).

B. Dr. Jones says "Galileo—under the pain of death recanted the faith that was in him." (p. 201).

The *Encyclopedia Britannica states*:

(1) No physical torture was ever intended for Galileo. (vol. IX p. 980). (The opposition of Galileo's persecutors to the Copernican theory was based on error; shall we magnify their guilt by warping the facts?)

(2) Galileo's support of the Copernican theory was based on personal observation, not on faith (Vol. IX p. 980).

C. Dr. Jones says "—he whispered to his friend 'Eppur si muove'—" (p. 202).

The *Encyclopedia Britannica* states that this tale (and the alleged quotation) are apocryphal. (Vol. IX p. 980).

D. Dr Jones says "Experiment and deductive theory here met in open contradiction." (p. 202).

Have experiment and inductive theory never met in open contradiction? Did such a clash invalidate inductive reasoning? Perhaps Dr. Jones should remind himself that both inductive and deductive reasoning are tools, and are not to be discarded because they are misused upon occasion.

E. Dr. Jones proposes "—Bacon —wrote his *Novum Organum* and definitely introduced the scientific method." (p. 202).

The *Encyclopedia Britannica* states:

(1) "Aristotle possessed in a remarkable degree the scientific habit of mind—." (Vol. II p. 353).

(2) "Aristotle divided reality into the several spheres of physics, biology, ethics, politics and psychology, and the reality which he studied in these spheres was the observable facts of actual and concrete individual substances. The essence of his procedure—was observation of the data." Vol. II p. 352).

(3) "—the sober registering of sober facts; and here he shows himself more Baconian than the Bacon of the *Novum Organum.*" (Vol. II p. 353).

These, then, are the facts. Surely Dr. Jones will not accuse the *Encyclopedia* staff of having taken "the stand of a few religionists and politicians."

Dr. Jones summarized "As long as men approach the solution of a problem with a preconceived notion —just so long will we have—intolerance, and — animosity." I believe that Dr. Jones, after such a clear exposition of the nature of bias, might have reviewed his own statements and set his own house in order.

While the masthead of THE CHEMIST asserts that the A.I.C. does not necessarily endorse the facts or opinions advanced in articles which appear in THE CHEMIST, you have a responsibility to inform rather than misinform. THE CHEMIST, in my opinion, has done a disservice to those readers who were not familiar with the Aristotelian method, or Galileo's tribulations, and were too busy, or too trusting to check up on Dr. Jones' assertions.

—Dr. Richard P. Welcher, M.A.I.C.

Editorial Note: Expressions of opinion which appear in THE CHEMIST are not intended to inform or misinform, but are published to show

trends or opinions in current thinking and the explanations advanced to support them. We are glad to receive comments from readers who disagree or agree with current trends and opinions.

Reprint Permission Granted

To The Editor:

We would appreciate having your permission to reprint an article from THE CHEMIST, that is, "The Chemist In The Glass Age," by Dr. Alexander Silverman, which appeared in the May 1948 issue.

Our magazine reaches 15,000 readers in South America, and we know that a Spanish version creates additional interest in the publication from which the original English article is taken. We will, of course, give you a credit line and send you a complimentary copy of the issue in which the Spanish version appears.

—Ernest Maass, Editor
El Indicador Industrial

New Science Publication in China

Science and Technology in China is now published bimonthly in English by the Natural Science Society of China, c/o National Central University, Nanking, China. Volume 1, Number 1, features an article entitled, "A New General Method for the Synthesis of a-Amino Acids Based on Hofmann's Degradation Reaction," by Kuo-Hao Lin, Liang Li, and Yao-Tseng Huang. The subscription price is $2.00 per year. Foreign subscribers should communicate with Mr. S. H. Doo, 7137 Pennsylvania Avenue, Pittsburgh 8, Pennsylvania, U. S. A.

New Officers of American Leather Chemists' Association

A. H. Winheim, vice president of International Leather Chemicals, Inc., and director of Planetary Chemical Company of St. Louis, Missouri, was elected president, for 1949-1950, of the American Leather Chemists' Association at its recent meeting at Bretton Woods, New Hampshire. Mr. Winheim is also general chairman of the 114th National Meeting of The American Chemical Society to be held in St. Louis in September.

Other officers are: R. M. Koppenhoefer, technical service director of Socony-Vacuum Oil Company, New York, president-elect; Fred O'Flaherty, director of The Tanners' Council Foundation Laboratory, University of Cincinnati,, secretary-treasurer; and A. W. Goetz of Brooklyn, R. H. Ewe of Girard, Ohio, W. T. Roddy of the University of Cincinnati, and Harold G. Turley of Philadelphia, councilors.

Irving Glass, executive vice president of Tanners' Council addressed the 580 leather chemists who assembled at the meeting.

Udy Receives Schoellkopf Medal

Marvin J. Udy, F.A.I.C., chemical engineer and metallurgist, 546 Portage Street, Niagara Falls, N. Y., was awarded the Schoellkopf Medal of the Western New York Section of the American Chemical Society on May 18th. He was honored "in recognition of his skill in industrial research, as exemplified by the invention of the first commercial processes for cadmium plating and the electrodeposition of chromium, and for the discovery of a unique process for the electrothermic extraction of chromium from its ores." Mr. Udy is consultant in chemistry and metallurgy for the New Jersey Zinc Company, the Vanadian Corporation of America, Fabrica Nacional de Carburo y Metallurgie at Santiago, Chile, and the Chromium Mining and Smelting Corporation.

Previous recipients of the Schoellkopf medal include the following Fellows of the A.I.C. The late Arthur W. Burwell—1941, in recognition of his work in producing and utilizing fatty acids, lactones and other chemicals from petroleum; Lawrence H. Flett—1942, for his research work on detergents of the higher alkylarylsulfonate type, applications of higher alkylarylsulfonate detergents, dyestuffs and dyestuff intermediates; the late Raymond R. Ridgway—1943, for his work in the science of electrothermics; and Alexander Schwarcmann—1945, for his research work in the field of chemically processing vegetable oils.

Industrial Research Institute Meets

Industrial Research Institute, Inc., celebrated its tenth anniversary, May 13-15, at Greenbrier Hotel, White Sulphur Springs, West Virginia. The following new officers were elected: President, E. W. Engstrom, vice-president, research, R.C.A. Laboratories Division, Radio Corporation of America; Vice-President, J. H. Schaefer, vice-president and general manager, Manufacturing Department Ethyl Corporation; Secretary-treasurer, C. G. Worthington, and directors, C. F. Rassweiler, F.A.I.C., vice-president, research and development, Johns-Manville Corporation, and Alex. Stewart, director of research, National Lead Company,

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McIlvain Becomes Chief of Division

John M. McIlvain, F.A.I.C., formerly director of administrative division Research and Development Department, is now chief of the Industrial Engineering Division, Atlantic Refining Company, Philadelphia Pennsylvania.

Heyden Elects New Vice President

Heyden Chemical Corporation announces that Arthur R. Broadman has been elected assistant vice-president. He joined Heyden in 1939 and served as chief job engineer during the Heyden operation of the Cherokee Ordnance Works at Danville, Penn., and as production manager when Heyden produced anhydrous ammonia at the Morgantown Ordnance Works, Morgantown, West Virginia, for the Government's overseas fertilizer program. More recently, he has been project manager at Heyden.

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To improve present products
To create new specialties
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Patent System Criticized

Dr. Johan Bjorksten, F.A.I.C., President of Bjorksten Research Laboratories, Chicago, Ill., stated in an open letter to the Commissioner of Patents which appeared in *Chemical and Engineering News* that: "The number of patents issued in 1947 is the smallest since 1888. This tremendous decline is largely due to the fact that the Patent Office now allows effective patents only to inventors who make an exceedingly detailed disclosure. These required disclosures entail so much work in chemical cases that few can afford the necessary work. As a result the secret practice of inventions has become more prevalent in preference to patenting ... If these excessively detailed disclosures are continued to be required, forcing the abandonment of costly applications and the practice of trade secrets, it will cause irreparable harm by depriving the public of valuable inventions."

New Periodical

Physiologia Plantarum. A new periodical covering all branches of plant physiology. Official publication of the Scandinavian Society for Plant Physiology. A quarterly, volume I, No. 1, is dated March 1948. Subscription price is about $8.00 (40 Danish Kroner) Available from Einar Munksgaard, Norregade 6, Copenhagen, Denmark.

COUNCIL

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Vice-president, Raymond E. Kirk
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Foster D. Snell, *Past President*
Charles L. Thomas, *Chicago Chapter*
W. D. Turner, *At-Large*
James R. Withrow, *At-Large*
Lincoln T. Work, *At-Large*

June Minutes

The 248th meeting of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS was held June 15, 1948, at The Chemists' Club, 52 East 41st Street, New York, N. Y. President Lawrence H. Flett presided. The following officers and councilors were present: M. L. Crossley, L. H. Flett, F. A. Hessel, K. M. Herstein, D. B. Keyes, H. W. Mackinney, R. E. Kirk, E. H. Northey, F. D. Snell, and L. Van Doren. V. F. Kimball was present.

The minutes of the previous meeting were approved.

Committees for 1948-1949 were appointed or reappointed. (A list of these committees appears on page 361).

The following resolution was adopted:

RESOLVED, Whereas, in the recent death of Dr. Joseph J. Mattiello, THE AMERICAN INSTITUTE OF CHEMISTS has sustained the loss of a past vice-president and honored Fellow; and

WHEREAS, during his entire affiliation with the INSTITUTE, Dr. Mattiello actively worked in the promotion of the best interests of same; and

WHEREAS, in his long and extensive association with scientific organizations, he has greatly aided the chemical profession; and

WHEREAS, through his intimate knowledge of the surface coating industry, he has prepared numerous publications and delivered many addresses which have added materially to the available technical information in this field; and

WHEREAS, his ready cooperation, engaging personality and support of good fellowship among chemists have endeared him to a host of fellow members and friends:

BE IT THEREFORE RESOLVED, that the Council of THE AMERICAN INSTITUTE OF CHEMISTS hereby records its deep sorrow and sense of loss sustained in the passing of this distinguished technologist and leader in the chemical and technical organizations; and

BE IT FURTHER RESOLVED, that this resolution be spread upon the minutes of this meeting and that a copy thereof be sent, together with our most sincere sympathy, to the widow and family of our late member.

Council Meeting Dates

Meetings of the National Council of THE AMERICAN INSTITUTE OF CHEMISTS are scheduled to be held at 6:00 p. m. at The Chemists' Club, 52 East 41st Street, New York 17, N. Y., on the following dates:

September 8, 1948
October 13, 1948
November 10, 1948
December 8, 1948

It was agreed that Council meetings during this season would be held on the second Wednesday of each month, the next regular meeting being scheduled for Wednesday, September 8, 1948.

President Flett appointed the following Committee to recommend action on the motion presented by Karl M. Herstein at the Annual Meeting held on May 7th: Karl M. Herstein, chairman; Dr. Foster D. Snell, Dr. Eduard Farber, and Logan D. Grupelli.

Upon motion, it was decided to appoint a committee on the activities of younger members, with the stipulation

that only one or two members of this committee should be over forty years of age.

The Secretary reported that we now have 2248 members.

The Secretary presented letters from the twenty-five-year members, and read excerpts from several of them.

The Treasurer's report was accepted.

The two vacancies which existed on the Council as a result of electing former councilors-at-large Flett and Kirk to the presidency and vice presidency of the INSTITUTE, were filled by Council appointment, for the current fiscal year, of Charles P. Neidig and Dr. Roy H. Kienle, who were in fourth and fifth places on the election ballot for Councilors.

A letter concerning a Fellow of the INSTITUTE was referred to the Committee on Ethics.

The following new members were elected:

FELLOWS

Abramowitz, William L.
President, American Resinous Chemicals Corp. 102 Foster Street, Peabody, Mass.

Antonoff, George
Professor of Physical Chemistry, Fordham University, New York, New York.

Baker, Paul H.
Research Chemist, Pittsburgh Plate Glass Company, Columbia Chemical Division, Barberton, Ohio.

Bandelin, Fred John
Technical Director; Flint, Eaton and Company, Decatur, Illinois.

Blatt, Albert Harold
Professor of Chemistry, Queens College, Flushing, New York.

Brauns, Friedrich Emil
Research Associate, Institute of Paper Chemistry, Appleton, Wisc.

Buurman, Clarence H.
Production Chemist, General Aniline & Film Corp, Grasselli, N. J.

Byler, William H.
Director of Research, U.S. Radium Corp., New York 7, New York.

Coleman, Gerald Hawley
Assistant Director, Organic Research Laboratory, The Dow Chemical Company, Midland, Michigan.

Dalin, George A.
Laboratory Director, Stauffer Chemical Company, New York, New York.

Dasher, Paul James
President and General Manager, Summit Industrial Products Company, Peninsula, Ohio.

Dewey, Bradley, Jr.
Director, Development Department, Dewey and Almy Chemical Company, Cambridge, Mass.

Houlton, Harold George
Director of Development Engineering, Colgate-Palmolive-Peet Company, Jersey City 2, New Jersey.

Huffman, Hugh Martin
Section Chief, Bureau of Mines, Bartlesville, Oklahoma.

Jaffe, Herbert
Research Fellow, Harvard Medical School, Thorndike Memorial Lab., Boston 18, Mass.

Montonna, Ralph E.
Professor of Chemical Engineering and Director, Institute of Industrial Research, Syracuse University, Syracuse, New York.

Mountsier, S. R., Jr.
Technical Director, Murphy Paint Division, Interchemical Corp., East Newark, New Jersey.

O'Boyle, Charles J.
Research Chemist (*Department Head*) Research Laboratory, Devoe & Raynolds Company, Louisville, Kentucky.

Oglesby, George R.
Lt. Colonel U. S. Army, Edgewood Arsenal, Maryland.

Robinson, Saul
Chief Factory Control Chemist, American Pencil Company, Hoboken, N. J.

Ross, Lawrence E.
Supervisor of Analytical Research, Piney River Works, Calco Chemical Division, American Cyanamid Company, Piney River, Virginia.

Schenck, Remsen TenEyck
Instructor in Chemistry, New York University, New York 3, N. Y.

Sherry, Arthur B., Jr.
Technical Service Chemist, Stanley Chemical Co., East Berlin, Conn.

Turner, Howard Sinclair
Assistant Director, Research & Development Division, Pittsburgh Consolidated Coal Company, Library, Pennsylvania.

MEMBERS

Berlt, Heinz Robert
Specifications Writer, Admiral Corp., 3800 W. Cortland Street, Chicago 47, Illinois.

Bynum, George Dan
Research Chemist, Foster D Snell, Inc., 29 West 15th St., New York, New York.

Frank, Harry Edward
Water Treatment Supervisor, G. M. & O. Railroad, Bloomington, Illinois.

Gardiner, Kenneth W.
Research Chemist, Firestone Tire & Rubber Company, Akron, Ohio.

Gardner, Charles
Technical Representative, Advance Solvents & Chemical Corp., New York, N. Y.

Jacobson, Werner
Chemist, Continental Soap Corporation, 2500 West 21st St., Chicago, Ill.

Konstandt, Felix V.
Chemist, Pittsburgh Testing Laboratory, New York, N. Y.

Mitchell, Charles M., Jr.
Chief Analytical Division, Wyeth Inc., Philadelphia, Penna.

Pedicini, Salvador A.
Chemist, Bakelite Corporation, Bloomfield, New Jersey.

Powell, Mrs. Ruth Hiller
Junior Chemist, Valentine's Meat-Juice Company, Richmond, Virginia.

Rosenthal, Howard
Chemist, Schaar and Company, Chicago 7, Illinois.

Sielski, Julius Anthony
Chief Analyst, Calco Chemical Division, American Cyanamid Company, Bound Brook, New Jersey.

Spikner, John Ellis
Assistant Chemist, Cook County State Toxicology Laboratory, Chicago, Illinois.

ASSOCIATES

Catalano, Tina Margaret
1230 62nd Street, Brooklyn 19, New York.

Dowd, Julianne Helen
528 79th Street, Brooklyn 9, New York

Florio, Gloria D.
3099 Bevy Place, Bronx 61, New York

Hanlon, Dolores Marie
696 Broadway, Bayonne, New Jersey.

Mattei, Frank Victor
Chemist, Ruberoid Company, South Bound Brook, New Jersey.

McGowan, Jane Alice
47 Palisade Road, Elizabeth, New Jersey.

Midwinter, Jean Audrey
734 Rugby Road, Brooklyn, New York.

Miller, Loretta Mary
866 Bushwick Avenue, Brooklyn 21, New York.

Tilton, Irene Clare
228 Duncan Avenue, Jersey City, New Jersey.

RAISED FROM MEMBER TO FELLOW

Sexton, Edwin L.
Chief Chemist, Flour and Cereal Division, Best Foods, Inc., Buffalo, New York.

Silkes, Bernard
Development Chemist, Pennsylvania Salt Manufacturing Company, Easton, Pennsylvania.

RAISED FROM ASSOCIATE TO MEMBER

Monahan, Emily
Research Chemist, Oakite Products, Inc., New York, New York.

There being no further business, adjournment was taken.

Dr. Gustav Egloff, F.A.I.C., spoke May 6th, before the Cornell University Club of Chicago on "The Oil Industry Yesterday, Today and Tomorrow." On May 19th he addressed the Tulsa Rotary Club at Tulsa, Oklahoma; May 20th the International Petroleum Exposition on "Modern Refining Technology;" May 21st the International Petroleum Exposition on "Petroleum, Yesterday and Tomorrow;" and on June fourth he spoke before the Illinois Bankers Association, Chicago, on "The Oil Industry Yesterday, Today and Tomorrow."

Chicago A.I.C. Chapter Elects

The Chicago Chapter, A.I.C., announces that the following officers were elected at its June meeting:

Chairman, Dr. Johan Bjorksten of Bjorksten Laboratories; vice chairman, Dr. Herman S. Bloch of Universal Oil Products Company; secretary-treasurer, Mary L. Alexander of Universal Oil Products Company; national councilor, Dr. C. L. Thomas of Great Lakes Carbon Corporation. In addition the following Chapter councilors were elected for three year terms: Bruce Bare and Dr. A. B. Cramer.

New York Chapter A.I.C. Elects Officers

The following new officers were elected at the meeting of the New York Chapter held on June ninth, at the George Washington Hotel, New York. Chairman, Dr. Martin Meyer, chairman, Department of Chemistry, Brooklyn College, Brooklyn, N. Y.; Vice-chairman, Dr. Lincoln T. Work, director of research and development, Metal and Thermit Corporation, Carteret, N. J.; Secretary-treasurer, Dr. Maurice J. Kelley, director Research and Development, National Oil Products, Harrison, New Jersey; and Councilors, Dr. Joseph T. Bashour, laboratory director, Stauffer Chemical Company, Yonkers, N. Y., and Dr. Albert F. Guiteras, research director, Foster D. Snell Inc., New York, N. Y.

Polytechnic Institute Degrees

The highest honor of the Polytechnic Institute of Brooklyn was awarded for the first time to a woman student, Ann Gunsolus, of Jackson Heights, who received the Irving W. Fay Memorial award at the 93rd annual commencement exercises. Miss Gunsolus took the bachelor degree in Aeronautical Engineering *summa cum laude*. At this same commencement, Mrs. Martin Schick of Brooklyn and her husband, both received the degrees of Ph.D. in chemistry. Honorary degrees were awarded to Sidney D. Kirkpatrick, editor of *Chemical Engineering,* and James W. Parker, president of the Detroit Edison Company.

Eightieth Birthdays

Dr. Frederick G. Zinsser, F.A.I.C., was honored by The Chemists' Club, New York, N. Y., by resolution on the occasion of his eightieth birthday, March 20th. Dr. Zinsser is a past president and the first elected member of The Chemists' Club.

Colonel Marston Taylor Bogert, F.A.I.C., was honored by The Chemists' Club, New York, N.Y., which passed resolutions of congratulations on the occasion of his eightieth birthday on April 18th.

Colonel Bogert is a charter member of The Chemists' Club, a signer of its certificate of incorporation in 1898, a life member and president in 1908, and honorary member since 1938.

Student Medal Award

The Washington Chapter, A.I.C., has made the following additional student medal award, "in recognition of leadership excellence in scholarship, and character" to:

George L. Rivat
College of Arts & Sciences
Georgetown University
Washington, D. C.

(For other Washington Chapter Awards, See June CHEMIST)

Aromatics Division Sold to Verona Chemical

The Verona Chemical Company, Newark, New Jersey, has acquired the Aromatics Division of the General Drug Company. This division has been prominent in the synthetic aromatic chemical field for nineteen years. Mr. C. K. Wellenkamp, formerly in charge of the division, and vice president of General Drug Company, has joined the staff of Verona Chemical Company.

RESEARCH CHEMIST available for employment in North Carolina now or New York City vicinity January, 1949. Five year's experience: Lead, batteries, research librarian, glues and gelatines, varied physical and chemical commercial testing, nylon throwing. Age 29. Memberships: A.I.C. and A.C.S. Bennett's *Formulary* lists applicant on Board of Editors. Please reply to Box 80, *The Chemist*.

Hedrick With Armour Research Foundation

Dr. Glen H. Hedrick, F.A.I.C., is now supervisor of the Organic Section of the Department of Chemistry and Chemical Engineering, Armour Research Foundation, Illinois Institute of Technology, Chicago 16, Illinois. He was formerly with Publicker Industries, Inc. Philadelphia.

Opportunities

Chicago Quartermaster Depot

The Chicago Quartermaster Depot announces openings for inspector, apprentice trainee (subsistence), $2,644.00 per year. At the end of three months, apprentice trainees will be promoted to trainee inspectors (subsistence), at $3,021.00 per year. Request information from Chief, Civilian Personnel Branch, Chicago Quartermaster Depot, 1819 W. Pershing Road, Chicago 9, Illinois.

U.S. Public Health Service, Civil Service Examinations, Atlanta, Ga.

Applications for Civil Service examinations will be accepted by the Board of United States Civil Service Examiners, Federal Security Agency, U. S. Public Health Service, Communicable Disease Center, 605 Volunteer Building, Atlanta 3, Georgia. Positions include: bacteriologist (medical), biologist, chemist, entomologist, mycologist, parasitologist, serologist. Grades P-2 through P-5. Salaries $3,397 to $5,905 a year. Request announcement No. 5-82-4 (48), (Unassembled).

Potomac River Naval Command

Applications are being accepted by the executive secretary, Board of U.S. Civil Service Examiners, for scientific and technical personnel, of the Potomac River Naval Command, Building 37, Naval Research Laboratory, Washington 20, D. C., for chemist, engineer, physicist, mathematician, and metallurgist positions. Salaries $3,397.00 to $5,902.00 per year. Information may be obtained from United States Civil Service Commission, Washington 25, D. C., or from post offices and Civil Service regional offices.

Ordnance Department Seeks Personnel

The Ordnance Department, Aberdeen Proving Ground, Maryland, is seeking personnel in the following departments: Ballistic research laboratories, development and proof services, ordnance department board, Aberdeen Ordnance Depot, ordnance school, and headquarters.

Positions include chemists P-3 to P-6, $4,149.60 to $7,102.20 per year. For further information please write to Civilian Personnel Division, Aberdeen Proving Ground, Maryland.

For Your Library

Crystalline Enzymes

By John H. Northrop, Moses Kunitz and Roger M. Herriott. Columbia University Press, New York City, 1948. *Second edition revised and enlarged xiv* 352 *pp.* 105 *Figs.* 15*x*23 *cm.* $7.50.

The first edition of this monograph appeared in 1939. It dealt with the chemistry and isolation of those proteolytic enzymes which were studied at the Rockefeller Institute in Princeton. The present, second edition, includes crystalline ribonuclease, crystalline hexokinase; protein synthesis and virus formation; the reaction of enzymes and proteins with mustard gas; and the isolation of crystalline diphtheria antitoxin.

Concerning methods of isolating enzymes, the authors state: "Experience unfortunately has shown that no one method can be relied upon to lead to the isolation of an enzyme. The most that can be said is that they are best handled by the technique of protein chemistry and that large quantities of material must be used so that weighable solid precipitates are available and not simply dilute solutions."

On page 23, there are listed 39 crystalline enzymes. In some instances, however, it could not be proved that the crystals were identical with the enzymes and this monograph does not call the reader's attention to this fact. Thus in 1939, Tadokoro and Takasugi reported that they have been able to crystallize ascorbic acid oxidase. Their claim has been contested by Dawson and Mallette (Advances in Protein Chemistry, 2, 179, 1945) who obtained highly active noncrystalline preparations of the oxidase. The Columbia University workers are of the opinion that the procedure employed by Tadokoro and Takasugi could only result in a product of low activity and that the identity of the crystals with the enzymes has not been proved. In 1942, Scott reported on the crystallization of carbonic anhydrase. This work was seriously criticized by Keilin and Mann (Nature 153, 107, 1944) who found that the crystals of carbonic anhydrase of Scott were merely compounds of the enzyme with the bases piperidine, isoamylamine and *n*-amylamine and that the crystals were completely inactive. Similar crystals were formed with gelatin and the bases instead of the carbonic anhydrase. Dalton and Nelson (J. Am. Chem. Soc., 61, 2946, 1939) obtained tyrosinase in crystalline state but these crystals were much less active than some noncrystalline material which they prepared.

Several investigators obtained pepsin concentrates which had two to four times the activity of the most ac-

tive crystalline pepsin previously reported. Subsequently it has been observed that the stability of pepsin decreases with the removal of accompanying impurities (Herriott, Desreux and Northrop, J. Gen. Physiol., 24, 213, 1940).

It may be seen from this brief review that the problem of crystalline enzymes is not a simple one. The contributions of the Princeton workers, however, are of immense importance to the protein and enzyme chemist. This monograph has my highest recommendations.

—Dr. Henry Tauber, F.A.I.C.

National Paint Dictionary

Third Edition. 1948. *By Jeffrey R. Stewart, F.A.I.C., assisted by Eugene F. Hickson, B.S.Che.E., and Raymond B. Seymour, Ph.D. Published by Stewart Research Laboratory, P. O. Box No.* 173, *Benjamin Franklin Station, Washington, D. C.* 704 *pp.* 6" x 9". 200 *illustrations.* $7.50.

This dictionary is designed to provide concise practical information for manufacturers, industrial consumers, and all others who require definitions of words used in the paint, varnish, enamel, and lacquer fields. New terms introduced during World War II are included in this edition.

The authors do not claim to have included every trade name or industrial material in the paint and allied industries, though the information for the book was secured by direct contact with the leading technical and scientific men in the industry itself, an undertaking which involved heavy correspondence with manufacturers, universities, and research organizations. In the few cases where replies were not received, the available information was obtained from other sources.

The authors are to be congratulated on a most creditable piece of work. This dictionary will be appreciated by anyone who has need for its specialized information.

—V. F. K.

American Wool Handbook

By Werner von Bergen and Herbert R. Mauersberger. Second edition. 1948. *Textile Book Publishers, Inc.* 1053 *pp.* 5¼" x 7⅝". *Illustrated. Green cloth cover, silver lettering. Index.* $8.00 *in U. S. and Canada;* $9.00 *elsewhere.*

This is a second, enlarged edition of this well-known book, first published by the American Wool Handbook Company in 1938. The new edition has 24 chapters, one more than the first edition, and 175 additional pages of text. The authors are both former teachers in the Extension Division of Columbia University. Arthur Besse, president, National Association of Wool Manufacturers, has again written the forward to this book and he terms it "a most compre-

hensive study of the wool textile industry with special emphasis on existing American practice." Twenty specialists in various phases of the business collaborated in the preparation of the text, which has been in preparation for over two years.

In addition to the thorough treatment of basic material in the book, several flow sheets on yarn manufacture and dyeing and finishing processes have been added. Separate chapters have been devoted to the chemical properties and the marketing of wool, the manufacture of carpets and rugs, woven and non-woven felts, and a complete bibliography. The labeling act and new tariff schedules are included. Many new photomicrographs, machinery, and other illustrations have been added. No effort has been spared to make this the finest handbook in the wool industry. Foreign nations will be particularly interested in the efficiency and continuous processing methods described in great detail. Marketing of wool and futures trading in wool and wool tops have been given greater attention.

—W. F. Leggett.

Reprinted

The article, "Chemical Prices in 1923 and 1948," by Dr. Frederick A. Hessel, F.A.I.C. which appeared in the Silver Anniversary issue of THE CHEMIST, was reprinted in the *New York Journal of Commerce*, in its June third edition.

Booklets

"The Future of Rocket Power," addresses by Harry F. Guggenheim and J. H. Doolittle at the preview opening of The Robert H. Goddard Rocket Exhibit, at The American Museum Of Natural History, New York, N. Y. Copies are available from the Daniel and Florence Guggenheim Foundation, 120 Broadway, New York, N. Y.

"The Procedure Governing Care of Resins", Textile Finishing No. 118 Textile Resin Department, American Cyanamid Company, Bound Brook New Jersey.

"New Technical and Scientific Books," sheet describing reprints of formerly restricted intelligence reports in the German chemical, metal, ceramic and textile industries. Chemical Publishing Company, Inc., 26 Court Street, Brooklyn 2, New York.

"Textile Applications of the Glyco Fatty Acid Esters," a reprint available from Glyco Products Company, Inc., 26 Court Street, Brooklyn, New York.

"Drafting Templates," leaflet describing templates for engineers, draftsmen, architects, designers, etc. Request it from Rapi Design Inc., Box 592, Glendale, California.

"Influence of Light on Chemical Inhibition of Lettuce Seed Germination," by Robert L. Weintraub. Publication 3915 of the Smithsonian Institute, Washington, D. C.

"Physical Measurements and Product Evaluation," leaflet available from Foster D. Snell, Inc., 29 West 15th Street, New York 11, N. Y.

"Hercules Products for Papermaking", " . . . for synthetic fibers," " . . . for textile manufacturing," " . . . for printing inks," " . . . for insecticides and disinfectants," and " . . .for paints." 4-page leaflets with cover illustration. Hercules Powder Company, Wilmington, Delaware.

"Hamilton Stopcock Adapter." Descriptive sheet. The Emil Greiner Co., 161 Sixth Avenue, New York 13, N. Y.

"Case History — Labor Relations." How Procter and Gamble avoided serious labor trouble for sixty years. Article in *Printers' Ink*, January 2, 1948.

Blumenthal Appointed Chief of Division

Warren B. Blumenthal, F.A.I.C., is now chief of the chemical division of Titanium Alloy Manufacturing Company, Niagara Falls, New York. He was formerly assistant chief of the chemical division of this company.

Fluid Dynamics

Stevens Institute of Technology, Graduate School Hoboken, New Jersey, announces that the second year of the curriculum entitled "Fluid Dynamics" will begin in September. This is a joint program of the Graduate Division, College of Engineering, New York University and the Graduate School of Stevens Institute of Technology. It covers a full academic program of one year leading to the Master's Degree.

P. C. Keith, president of Hydrocarbon Research, Inc., spoke recently before Calco research and chemical engineers at the Bound Brook plant of the Calco Chemical Division, American Cyanamid Company. He recommended that private industry should take the major role in the production of synthetic liquid fuel from coal and gas, with the Government financing long-range developments.

Dr. Frederick D. Rossini, chief of the Section on Thermochemistry and Hydrocarbons of the U.S. Bureau of Standards, spoke on "Fractionation Analysis and Purification of Hydrocarbons," at a recent meeting of the research, process development and engineering personnel of the Calco Chemical Division, American Cyanamid Company, Bound Brook, New Jersey.

Condensates

Ed. F. Degering, F.A.I.C.

A fungicide based on tetra copper calcium oxychloride, Du Pont's Copper-A compound, is recommended for use against late blight of tomatoes.

The question for each man to settle is not what he would do if he had the means, time, influence and educational advantages, but what he will do with the things he has.

—Hamilton Wright Mabie

People, like boats, toot loudest when they're in a fog.

—Bulletin
Emmaus, Penn.

A business may spread itself over the whole world and may employ a hundred thousand men, but the average person will usually form his judgment of that business through his contact with one individual. If this person is rude or inefficient, it will take a lot of kindness and efficiency to overcome that bad impression.

—The Cub
Woodland, Calif.

I predict that we will be wise enough to escape a global war.

—James B. Conant

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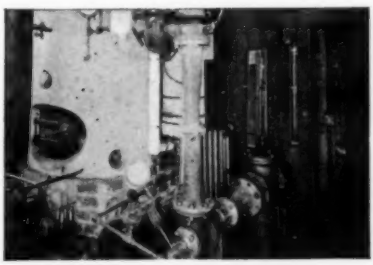

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